

**STRATEGY
RESEARCH
PROJECT**

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**THE DENTAL READINESS OF THE ARMY WAR COLLEGE:
CLASS OF 1999, A COMPARISON STUDY
TO THE CLASS OF 1985**

BY

**COLONEL SIDNEY A. BROOKS, SR., DE
United States Army**

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19990527 004

USAWC CLASS OF 1999



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USAWC STRATEGY RESEARCH PROJECT

THE DENTAL READINESS OF THE ARMY WAR COLLEGE: CLASS OF 1999, A
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By

Colonel Sidney A. Brooks Sr., DE

Colonel William F. Barko, MS

Project Advisor

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U.S. Army War College
CARLISLE BARRACKS, PENNSYLVANIA 17013

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ABSTRACT

AUTHOR: Sidney A. Brooks, Colonel DE,
TITLE: The Dental Readiness of the Army War College Students
Class of 1999, A Comparison study to the class of 1985.
FORMAT: Strategic Research Project
DATE: 1 April 1999 pages: 40
CLASSIFICATION: Unclassified

This research project provides a comparison of the dental readiness status between two resident Army War College classes, 1985 and 1999. This paper also examines the categories of dental services provided to these students during their careers and identifies unmet dental requirements. The final phase of this study provides a summary of a patient questionnaire evaluating the performance of the Department of Defense (DOD) dental readiness program from a customer perspective. Dental conditions have a strategic impact on unit readiness. This study, through a select sample reflects the state of dental readiness and future senior leader attitudes toward these services. Dental readiness throughout DOD has improved significantly in recent years.

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The Dental Readiness of the Army War College: Class of 1999, A comparison study to the Class of 1985

PURPOSE

Eliminating dental emergencies to decrease operational impairment is truly the underlying theme behind military dental readiness. The Department of Defense (DOD) has invested billions of dollars to ensure that combat forces remain in a high state of preparedness. Also, lessons learned from operation Desert Storm/Shield and other recent military deployments around the world have instilled the need to maintain a healthy fighting force. The DOD dental readiness program is a true success story, which needs to be told. In order to evaluate the effectiveness of the DOD dental readiness program, a comparison of the readiness posture from a pre-Desert Storm era to the present would be a benefit to strategic leaders.

The Army War College class in 1985 as well as the current class consists of senior military officers from all branches of service. These career officers represent to some degree the soldiers, sailors, airmen and marines serving our country. In 1985, Colonel Robert Webster completed a study of the dental readiness of that class¹. There are very few published articles that examine dental readiness of U.S. forces. This study compares the dental readiness of the 1985 Army War College class

to the current 1999 class. It also investigates the categories of care provided to these career officers over a 15-23 year period. Any unmet dental requirements for this population are identified and evaluated. The next part of this research project examines how well dental activities across DOD supported these officers.

The Department of Defense, Health Affairs identified the need to increase dental readiness following after action reports from the Persian Gulf War. This paper provides an opportunity to examine the effectiveness of the dental readiness program on a selected military population.

BACKGROUND

Medical/dental readiness has been a major focus of the Department of Defense, Office of Health Affairs over the last decade. The multitude of preventive medical/dental systems and programs employed throughout the armed services are designed to produce and maintain a healthy, combat-ready force. A military force capable of shaping the international environment, responding to threats and preparing to win our nations' wars must be ready to implement that strategy.

Protection of the force begins by providing unified commands with personnel that are healthy and physically fit to

do their mission anywhere in the world. In recent years, DOD has instituted several progressive health prevention programs, which resulted in a military force better prepared to do its mission. Efforts by the Office of Health Affairs to reduce potential health risks to U.S. forces should be highlighted.

Preventive medical programs, like dental readiness, have been designed and implemented to reduce the quantity of disease non-battle injuries, which have plagued militaries for centuries. Programs designed to reduce excess weight, control stress, increase smoking cessation, and improve dental fitness are all designed to improve the health of our most precious asset. These programs have a positive impact on the overall health of military personnel. A secondary but extremely important factor is that these programs help to reduce DOD health care cost.

Every military service has its share of untimely dental emergencies both during training and actual deployments. Seven percent of medical evacuations from U.S. Navy ships and submarines in a study in 1995 were due to non-injury related dental emergencies.² Interruption of the mission to evacuate personnel due to non-battle circumstances is a waste of valuable time and resources. Military personnel today must be physically, mentally, and medically prepared to deploy and operate in a hostile environment on short notice.

Human resources are indeed a precious commodity and should not be abused. Accessions and retention rates are currently low across the board in all branches and components. Commanders at each level are employing a smaller force to accomplish the same complex mission. Every effort must be made to insure commanders employ a medically fit force. Although some seventy percent of dental emergencies are preventable, dental disease has historically accounted for approximately twenty percent of disease non-battle injury.³

"Health interests are not a high-priority issue in the Pentagon" according to Sara Lister, former Assistant Secretary of the Army.⁴ The reason for her comment is not clear, but it could be concluded that medical and dental issues in the Pentagon are often fairly transparent at the senior levels. Few published studies have addressed the increase in dental readiness of military personnel in recent years. The overall efficiency of preventive dental programs administered in DOD facilities is having a direct impact on current military deployments. This paper should stimulate discussion for ensuring healthy combat ready forces for future operations.

Department of Defense Dental readiness is one of the most important programs leaders have at their disposal to evaluate unit preparedness for deployment. This program, as it is currently designed, provides the commander a simple, measurable

framework to monitor his or her unit's dental deployment status. In military age groups, caries related pulpitis (inflammation of pulp tissue, causing tooth pain) has generally been found to be the leading cause of dental emergencies, with gingival conditions (gum tissue) being the second leading type of problem.⁵ Commanders can be reasonably confident that members of their units who are in Dental Class 1 or 2, will be on station performing their assigned combat mission. The chances of those personnel becoming casualties due to a dental emergency will be insignificant. The goal of the current dental readiness program is to help insure that service members don't become a " non-combatant inflicted casualty."

The number of service members in each dental fitness classification can help commanders determine the risk of potential dental emergencies, which may impact on their assigned mission. The following table demonstrates the importance of reducing the number of service members in Class 3 to zero.

Table 1

Dental Rate of Emergencies Per Fitness Classification per 1000 service members per year ³	
Class 1	67
Class 2	145
Class 3	530

The mandatory reduction of forces in the last ten years has placed an increased burden on the deployed forces around the world. With an increase in operational tempo (OPTEMPO) and a reduction in the quantity of forces, every effort must be made to insure this smaller fighting force is as healthy and combat trained as possible.

Since World War II, history demonstrates dental emergencies involving active duty personnel during extended field exercises and deployments, had a negative impact on units. Estimates of preventable emergencies range as high as seventy-four (74%)⁶. During the early eighties, Payne and Posey determined the annual incidence of dental emergencies to be 167 per thousand troops, resulting in an annual lost duty time of 121.5 days per thousand troops.⁷ In another study, during the Vietnam War, the Navy and

Marine Corps reported the annualized rate of 157 dental emergencies per 1,000 deployed troops per year.⁸

More recently, another study investigated dental emergencies among U.S. Marines during Desert Shield/ Storm. The authors pointed out several important facts concerning dental emergencies. The rate of dental emergencies for Marines was 100.5 per 1000 for 35 weeks.⁹ Caries and third-molar complications accounted for the majority of all emergency visits. Few dental emergencies in this study involved teeth requiring root canal therapy or stemmed from severe periodontal disease. This article indicated that, over time, even though the quality of care had improved, these Marines encountered the same types of dental pathology as did Marines twenty years ago.

The end of the Cold War required significant changes to our national military strategy and policies. Limited time to train the force and escalating deployments to real-world crises caused DOD to take measures to insure that the "Total Force" is ready and medically healthy to deploy. One lesson learned from Operation Desert Shield/ Storm is the importance of dental readiness and its effect on mobilization of the Reserve and National Guard force. Dental facilities in the United States processed over 150,000 Army National Guard and Reserve soldiers. Both dental resources (dental units) and mobilization schedules

were seriously hampered by the excessive number of service members requiring dental treatment prior to mobilization.¹⁰

Published research does not support the theory that units with high levels of dental readiness will potentially have less dental emergencies during deployments. However, logical deduction supports the contention that if dental pathology is eliminated prior to a deployment, the chances that patients will sustain a dental emergency (other than trauma) are very low. According to several authors, combat sick call can decrease by 50 to 80% with simple interception of class 3 conditions prior to deployment.¹¹

The Army War College class provides an excellent cross sampling of military personnel to use to evaluate DOD dental readiness. The senior service college class consists of Army, Navy, Marine, and Air Force officers from both the Active and Reserve/ National Guard components. For the most part, these officers have served eighteen years or more and have received dental care from many of the military treatment facilities around the world. Their dental record provides a unique audit trail of treatment, which overlaps and parallels the development of the DOD dental readiness program.

The dental readiness program in the mid-eighties was competing with tight training schedules, equipment maintenance and other readiness priorities. In addition, the classification

system as it was initially written offered a broad and ambiguous definition of class 3 categories. Therefore, commanders paid little attention to this program and the rate of dental pathology grew in all branches of the military. Operation Desert Shield/Storm highlighted the gross negligence on our part to address this deficiency.

The senior leadership at DOD finally added legitimacy to the program by publishing more specific guidelines concerning dental readiness categories overall. The Department of Defense Instruction 6410.1: Standardization of Dental Classification and Specifications for Conducting Dental Examinations was initially published in April 1985 and updated in 1991¹².

Department of Defense Policy 97-020, Policy for Standardization of Dental Classifications, is designed for both Active duty and Reserve components and adds further clarification on dental readiness guidelines. This essential document outlines the current policy for annual dental examinations, deployment of personnel in Class 3 and 4 status.¹³

Dr. Edward D. Martin, acting Assistant Secretary of Defense for Health Affairs outlined a revised guideline for dental readiness in February 1998. Dr. Martin's efforts to insure compliance with these policies, was a significant effort to provide consistency between Active and Reserve components. Health Affairs added 25 million dollars per year in fiscal year

1997 to the dental programs of the Army and Navy to augment their efforts to reach the 95% target for active duty personnel.¹⁴

In an effort to have the reserve component at the same dental readiness posture, the TRICARE Selective Reserve Dental Program (TSRDP) was formulated. The TSRDP allows members of selected reserve units the opportunity to reach a similar goal of readiness as the active duty force. The TSRDP provides access to "readiness oriented care" for insured members of the Selected Reserve. Voluntary enrollment provides semiannual examinations from civilian providers without a co-payment.¹⁵ The success of this program has not been evaluated as of today and should be examined carefully within the next five years.

Colonel Robert C. Webster, a former Army Dental Corps officer, examined the dental readiness of students assigned to the Army War College in 1985. To date, this is the only study available which allows a comparison to evaluate improvement in the process of dental readiness in the military officer population. Colonel Webster's study was completed when dental readiness was in its infancy. The tremendous growth of dental health prevention programs has had a positive effect on the force over the last ten years. This Army War College study is designed to look at Colonel Webster's research and compare the dental readiness of the officers then and now. Additionally,

this paper investigates unmet dental requirements and provides feedback from the patients concerning the success of this program.

METHODOLOGY

Colonel Webster's study examined six areas. The dental fitness categories of the class, as of August 1984; the fitness of the class eight months later; panoramic film accountability; last examination appointment; dental class 3 classifications; and dental treatment received for eight months while at Carlisle.

This study examined all of the areas in Colonel Webster's study except for the last one. Because the class of 1999 reported to Carlisle at ninety-five percent (95%) class 1 or 2, no evaluation of treatment conducted after arrival was required. This study utilized a dental record screening process and a written patient survey to gather information.

1. Patient Record Screening

In August 1998, the dental readiness statistics belonging to the current resident Army War College class were reviewed and a comparison made to the AWC class of 1985. A retrospective examination of 239 dental records belonging to the 1999 class was conducted. Information gathered as part of the record screening included the following administrative data; current

dental classification as of the date the record was in-processed into the Carlisle Dental Clinic; the students name; the last four numbers of their social security number; panoramic film date; service branch; a list of dental services provided; and, finally, any unmet dental requirements. Panoramic films were reviewed for diagnostic quality and film age.

DENTAL RECORD SCREENING PROCESS

- a. Dental records were screened to verify the correct dental readiness classification and were compared with that of the clinic database. Next, each record was checked to verify correct record tape color. (Blue= Class 1, White= Class 2, Red= Class 3 and Green = Class 4)
- b. The bitewing radiographs and panoramic films were reviewed for diagnostic quality and age.
- c. Each written treatment log (DD Form 603 or 603A) in the patients records was reviewed to determine the types of care and procedures provided to these patients by the military. All data from the officers' records from the date of their entrance on active duty, to their current assignment was carefully reviewed.
- d. Unmet dental requirements were reviewed and annotated. These requirements were divided into two separate categories. First, any dental treatment the patient failed to have

completed and then those services, which were recurring in nature and were not, completed.

2. PATIENT QUESTIONNAIRE

A written, three-page questionnaire was distributed to the current AWC class in October of 1998. The primary purpose of this questionnaire was to determine the level of understanding of the dental readiness program from a battalion-level commander's point of view. Questions consisted of multiple choice and essay.

RESULTS

Two hundred thirty-nine (239) dental records belonging to the 1999 resident class of the Army War College were reviewed in the Carlisle Army Dental Clinic during August 1998. The author compared the data to Colonel Webster's study. In the 1985 study, the readiness/fitness of the class was reported to be eighty percent (80%) Class 1 or 2 at the beginning of the school year¹⁶. That readiness statistic did improve to eighty-eight percent (88%) over the course of the academic year (some eight months). That figure would still be considered unacceptable by today's standard of ninety-five percent (95%) class 1 or 2.¹⁷ In comparison, the class of 1999 reported ninety-five percent (95%) classes 1 or 2 in August of 1998.

Webster's study (table 2) shows fourteen students or 6% of the 1985 class were listed as dental class 3 (most likely to cause a dental emergency), while the current class had one student in class 3 status.¹⁸ The author described in detail, the potential emergency conditions which existed for each of the fourteen students. Of those students in dental class 3, fifty percent (50%) had caries (cavities) as the primary cause for class 3. Fourteen percent (14%) required endodontics (root canal) treatment, while twenty-one percent (21%) required periodontal (gum) therapy. Only one student in Webster's 1985 study required oral surgery (extraction) as a means to eliminate his or her class 3 status.

TABLE 2

DENTAL READINESS COMPARISON OF THE CLASS OF 1985 AND 1999

1. Dental readiness upon arrival at the AWC August 1984

Dental Class 1	99	Class 1 and 2 = 80%
Dental Class 2	73	
Dental Class 3	14	Class 3 and 4 = 20%
Dental Class 4	30	
Class total	216	

2. Dental readiness upon arrival at the AWC August 1998

Dental Class 1	106	Class 1 and 2 = 95%
Dental Class 2	121	
Dental Class 3	1	Class 3 and 4 = 5%
Dental Class 4	11	
Class total	239	

These same fourteen (14) students were considered non-deployable and would require extensive treatment to correct the problem. These students lost valuable class time, (over 80 appointment hours) to correct these deficiencies during the first eight months of the academic year. One study by Amstutz et al estimated that it would take 2.75 hours per patient to change their status from class 3 to class 2¹⁹. The majority of these dental conditions could have been prevented with routine dental

care at their local dental activities prior to attending the Army War College.

In contrast, only one student in the current 1999 class arrived at the Army War College in a non-deployable status. This student required endodontic therapy (root canal) as well as restorative care to be ready for military deployment. This significant decrease in pathology (dental disease) among the current class is evidence that at least some officers attending the Army War College have been examined and treated aggressively prior to attending school. Another difference in the two classes is seen in the dental class 4 category. In 1985, twenty percent (20%) of the AWC class were class 4. In comparison, the current class of 1999 had only five percent (5%).

Students from the 1985 class had forty-one missing panoramic x-ray films from dental records. The current class had 100% accountability for all panoramic films.

The second portion of this strategic research project investigated the types of dental services not provided (unmet requirements/needs).

The review of dental records demonstrated patients received a full range of treatment options during their careers. The most common treatments were prophylaxis and restorative. Ninety-nine percent (99%) of the AWC class of 1999 had received a prophylaxis or cleaning at sometime in their careers. A

prophylaxis or dental cleaning is a procedure, which is considered a recurring event, and can occur as often as every three months to once a year. Restorative dentistry (fillings) accounted for the second highest number of procedures performed on this population. It accounted for ninety-four (94%) of the care given to these officers.

The unmet dental requirements of the 1999 AWC class are as follows. Twenty-two percent (22%) require a prophylaxis; eleven percent (11%) requires some form of restorative dentistry. Less than one percent (1%) of the current class required endodontics and less than one percent (1%) require any form of advanced periodontal therapy or oral surgery. However, ten percent (10%) of the class does require some form of prosthetic rehabilitation. Single crowns for large restorations accounted for the majority of requirements. None of the unmet dental requirements affect the deployment status of this class. While forty-five percent (45%) of the current AWC class had received oral surgery sometime in their careers, only forty-two percent (42%) ever had any type of prosthetic services. Periodontal disease, including gingivitis (gum disease) is the most common disease in man today. Yet only sixteen percent (16%) of the class has been treated for severe periodontal disease according to the records.

DENTAL SURVEY SUMMARY

Only 125 students completed the questionnaire accounting for fifty-two percent (52%) of the student population. The summary of the instrument is as follows:

(1). Forty-seven (47) separate military dental facilities represented

(2). One hundred and fifteen (115) Army students responded

(3). Ten (10) Air Force students responded

(4). Ten (10) Navy/ Marine students responded

Sixty-two percent (62%) of Army students responded that they understood the dental readiness program completely while thirty-six percent (36%) indicated they partially understood the program. Seventy percent (70%) of the Air Force either partially or completely understood the dental readiness program while the Navy and Marine population indicated one hundred percent (100%) either completely or partially understood. Seventy-eight percent (78%) of all students indicated the Dental Activity (DENTAC) at their last duty stationed completely supported their unit dental readiness requirement while twenty-one percent (21%) of all students felt the DENTAC somewhat supported them.

The majority of answers to the question of "what the DENTAC could do for you as commander" indicate the dental activities should focus on two issues. First, unit rosters need to be

updated more frequently by unit personnel. According to several students, these unit rosters failed to match the database used by the dental clinics by as much as 120 days. Secondly, the dental clinic hours should to be expanded to parallel the local training schedules.

The most surprising item of this survey is that officers were satisfied with the care received during their entire military careers. Thirty (30) students were concerned about dental services after retirement while twelve (12) students indicted some concern about dental care for their dependents. Three (3) students were not happy with their care, citing lack of qualified dentists providing care to them at their last duty station

The Reserve and National Guard students fall into a different group because of the method by which they receive dental treatment. Seventy-seven percent (77%) of these students indicated that they understood the dental readiness program but less than half of these students were aware of the TRICARE Selected Reserve Dental Program.

DISCUSSION

Survey data supports the fact that dental readiness in the military has improved over recent years. The significant difference in readiness figures between the two War College

classes can be related to the emphasis placed on dental readiness by unit commanders, the dental activities, and the service members. This triad of commitment has been effective in increasing the dental readiness of units. The oral health fitness program established within DOD is a combination of accountability and responsibility working in harmony.

Unit commanders at each level are responsible for the dental fitness of his or her service member. Often enough, it is the dentist who first diagnoses the patient with a serious systemic disease following a routine intra-oral examination. It is evident from the surveys that DENTAC commanders from all branches have taken this mission seriously and have provided a key service to patients with competence and compassion.

The American military community is comprised of transient personnel who are maintained by dentists around the world who are also transient. This offers a different set of problems for treatment planning and presents both the clinician and the patient with new challenges in the way of treatment completion. For various reasons, some needed dental services are not being completed. Normally, military personnel are provided a dental examination when they arrive at their new station. Competition between military training schedules is a major problem to dental activity commanders. Some procedures, as simple as a dental cleaning, can be very difficult to complete.

The Reserve Component AWC students can receive dental care similarly to other active duty personnel but may elect to receive dental care from their private civilian dentist at home station. The TRICARE Selective Reserve Dental Program (TRISRDP) is a new program designed by DOD to bring the reserve forces to the same level of dental readiness as its active duty counterparts. Because (TRISRDP) is so new, it will take some time to evaluate its cost effectiveness.

Another interesting aspect of this study is the examination of the panoramic film in the dental record. Department of Defense, Health Affairs is making a transition from using the dental panoramic film for forensic identification, to the use of deoxyribonucleic acid (DNA). The DNA tends to be far more reliable, which is why it is now required for deployments, thus eliminating concerns about dental records accompanying personnel on deployments.²⁰ However, DNA testing of the active duty and reserve population is not yet complete. According to the Army Surgeon General's Office, as of October 1998, the active force has reached only eighty-seven percent (87%), while the National Guard reached approximately fifty-three percent (53%) and the Reserves is at only thirty-nine percent (39%). The Army's goal for DNA testing is ninety percent (90%). As a result, scientists should not depend completely on DNA testing for identification.

As an example, in 1997, two active duty officers (one Air Force and one Army) were killed while flying a privately owned aircraft. Their plane crashed and burned into the side of a mountain several miles from post. The civilian forensic dentists did not have immediate access to DNA information. Identification process in this one case relied in part on the military dental record and panoramic film for identification of the remains. The panoramic film was a significant aid to the coroner.

The panoramic film in conjunction with bitewing radiographs is still considered a valuable tool in diagnosis and treatment planning. United States Air Force Instruction 47-101, which outlines dental treatment in the military setting, indicates that panoramic films are ordered when a person enters the Air Force or when the existing film is no longer of diagnostic value or quality.

Professional judgement is the single most important factor in the determination of prescribing radiographs on patients. Only three films belonging to the AWC class of 1999 were determined to be of poor diagnostic quality by the author. Seventy-one (71) records or thirty (30%) of the AWC class of 1999 had panoramic films older than 1990. Today, most patients referred to oral surgeons for third-molar (wisdom teeth) surgery in the military are required to have a panoramic film, which is less than a year old. Few students at the AWC will be candidates

for third molar surgery, but a conservative guess is that a ten year old dental film is unacceptable and would not meet the standard of care at most installations.

An U.S. Army dental epidemiologist, in an article published in 1994 concluded; "satisfaction with military dental care should be surveyed periodically, especially during periods of radical restructuring of the Army and its medical services." For the Army Dental Care System to improve quality of care from its customer's perspective, it must monitor patient satisfaction before, during, and after the current draw-down.²¹ This sample survey demonstrated evidence that most students attending the Army War College were satisfied with their dental care. Forty-seven different health care facilities within DOD provided a much-needed service to these officers prior to their arrival at Carlisle.

CONCLUSIONS

The Office of the Assistant Secretary of Defense (Health Affairs) has statutory responsibility for the overall supervision of the health affairs within DOD and is the principal staff assistant and advisor to the Secretary of Defense for all DOD health policies, programs and activities.²² The program for dental readiness was instituted to reduce the numbers of non-deployable Soldiers, Sailors, Airmen and Marines.

The success of this program within DOD can be closely linked to the leadership of the unit commanders and dental activity commanders around the world. Billions of dollars in equipment and manpower have been allocated to help produce a healthy, trained, and deployable military.

Oral health is an indispensable part of the service members' well being. The table below outlines the dental readiness data for the last five AWC resident classes. Table 3 demonstrates that from 1994 to the present, dental readiness of the Army War College class as progressively improved. The class size each year has continued to decrease in size but readiness has increased over the last five years.

TABLE 3

ARMY WAR COLLEGE SIZE AND DENTAL CLASSIFICATION

DATE	CLASS SIZE	% OF CLASS 1 AND 2
AUGUST 1994	274	92%
AUGUST 1995	253	92%
AUGUST 1996	244	93%
AUGUST 1997	239	91%
AUGUST 1998	239	95%

Sustainment of the force, which is where dental readiness belongs, in peace or in war, is critical to the management life cycle model used in the Army. Force development ⇒ Acquisition ⇒ Training ⇒ Distribution ⇒ Deployment ⇒ Sustainment ⇒ Separation completes the cycle. Other branches of the military have

similar models, which they use to manage the force. Dental readiness programs in particular have been extremely successful in recent years in reducing the numbers of non-deployable individuals. A combination of pre-deployment vaccinations, a robust physical fitness programs, and Dental readiness simply complements the pre-deployment status of the combat warrior. In recent deployments, dental readiness as well as other types of medical readiness programs have eliminated most diseased non-battle casualties. The student population examined in this study may be considered small, however; the number years of treatment in military clinics, education level and consistent numbers of students make this an attractive group to study.

The future of dental readiness of U.S. forces lies in the hands of senior military leaders. The combination of declining human resources and increasing operational tempo place enormous strain on the force. Delivery of dental care, as well as other quality of life services, may be another challenge for strategic leaders in the future. A robust medical and dental service program can make a difference in the retention of career service members.

Increased funding and a firm commitment by Health Affairs will sustain future Dental readiness concerns especially during implementation of Joint Vision 2010. Future military operations will require full-dimensional protection of the warrior.

Although this project focuses on the implications of dental readiness in recent years, both senior civilian and military leaders must plan for future forces and operations, incorporating all aspects of readiness to meet America's military strategy. The total military force of the future, as depicted in Joint Vision 2010, will be smaller, more lethal; more service integrated, and must still remain healthy to perform at an optimum level.

APPENDIX A

DEFINITIONS

1. Bitewing radiographs - Dental x-ray films used to identify dental caries between posterior teeth in the same dental arch. These films are normally taken at the discretion of the dentist based on clinical findings.
2. Dental caries- Decay or the physical breakdown of sound tooth structure.
3. Dental Emergency - An acute episode of a dental or oral condition which becomes painful or threatens to become systemically debilitating. Excessive bleeding following surgery or an infection would also classify as a dental emergency. In a military setting the definition is expanded to include conditions which the patient genuinely perceives to be severe enough to cause him/her to leave their duty station to seek treatment.
4. Dental emergency care - Care provided to the service member that relieves the immediate or acute episode and allows for the patient to be returned to duty as soon as possible. This treatment may include but not limited to: removal of decay and placement of a temporary restoration, extraction, initial root canal therapy to remove the pulp, scaling and root planning and incise and drainage.

5. DNA - (deoxyribonucleic acid), is a double-stranded helix of nucleotides, which carries the genetic information of a cell. It encodes the information for the proteins and is able to self-replicate.
6. Endodontics - The treatment of diseased pulp tissue; commonly called root canal therapy.
7. Oral Surgery - Extraction of teeth. (For the purpose of this paper only)
8. Panoramic Radiography - A diagnostic imaging procedure that records both the mandible and maxilla on a single plain film.
9. Periodontics - the treatment of the supporting tissues to include gums, teeth, periodontal fibers, and bone.
10. Prophylaxis - The scaling and polishing procedures to remove coronal plaque, calculus and stain. Commonly called a dental cleaning.
11. Prosthodontics - The replacement of teeth with either partial or full removable appliances and or three or more units of crown and bridge (crowns).
12. Restorative dentistry - is the replacement of decayed tooth structure with dental materials which when properly placed, restore form, function and esthetics. Commonly called fillings.
13. Unmet Dental Requirements - those procedures identified through an annual exam, but have not been completed. Some dental requirements are cyclic in nature, e.g. prophylaxis.

APPENDIX B

Dental classification for DOD military personnel IAW: DOD Instruction 641.1, Standardization of Dental Classifications:

CLASS 1: Not requiring dental treatment or reevaluation within 12 months.

- A. No dental caries or defective restorations
- B. Arrested caries for which treatment is not indicated
- C. Healthy periodontium, no bleeding on probing, oral prophylaxis not indicated
- D. Replacement of missing teeth not indicated
- E. Unerupted, partially erupted, or malposed teeth that are without historical, clinical, or radiographic signs or symptoms of pathosis and are not recommended for prophylactic removal
- F. Absence of temporomandibular disorder, stable occlusion

CLASS 2: Conditions present which, if not treated or followed up, are not expected to, but have the potential to result in dental emergencies within 12 months.

- A. Treatment or follow-up indicated for dental caries with minimal extension into dentin or minor defective restorations

easily maintained by the patient where the condition does not cause definitive symptoms.

B. Interim restorations or prostheses that can be maintained by the patient where the underlying condition does not cause definitive symptoms. (This includes teeth that have been restored with permanent restorative materials, but for which protective coverage is indicated).

C. Edentulous areas requiring prostheses but not on an immediate bases

D. Periodontal disease or periodontium exhibiting:

- (1) Requirement for oral prophylaxis
- (2) Requirement for maintenance therapy
- (3) Non-specific gingivitis
- (4) Early or mild adult gingivitis
- (5) Supragingival or slight subgingival calculus

E. Unerupted, partially erupted, or malposed teeth that are without historical, clinical, or radiographic signs or symptoms of pathosis, but which are recommended for prophylactic removal

F. Active orthodontic treatment

G. Temporomandibular disorder patients in maintenance therapy

*** Class 1 and 2 patients are considered deployable or dental ready

CLASS 3: Oral conditions which, if not treated, are expected to result in dental emergencies within 12 months. When there are questions in determining classification between Class 2 and Class 3, patient should be placed in Class 3.

A. Dental caries tooth fractures or defective restorations where the condition extends beyond the dentinoenamel junction and causes definitive symptoms; dental caries with moderate or advanced extension into dentin; and defective restorations not maintained by the patient.

B. Interim restorations or prostheses that cannot be maintained for a 12 - month period.

C. Periodontal disease or periodontium exhibiting:

- (1) Acute gingivitis or pericorinitis
- (2) Active moderate to advance periodontitis
- (3) Periodontal abscess
- (4) Progressive mucogingival condition
- (5) Periodontal manifestations of systemic disease or hormonal disturbances
- (6) Moderate to heavy subgingival calculus

D. Edentulous areas or teeth requiring immediate prosthodontics treatment for adequate mastication, communication, or acceptable esthetics

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E. Unerupted, partially erupted, or malposed teeth with historical, clinical, or radiographic signs or symptoms of pathosis, that are recommended for removal

F. Chronic oral infections or other pathologic lesions including:

- (1) Pulpal or periapical pathology requiring treatment
- (2) Lesions requiring biopsy or awaiting biopsy report

G. Emergency situations requiring therapy to relieve pain, treat trauma, treat acute oral infections, or provide timely follow-up care

H. Temporomandibular disorder requiring active treatment

CLASS 4: Patients requiring a dental examination²³

*** Class 3 and 4 patients are considered non-deployable

Word Count: 5,816

ENDNOTES

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⁴ Seymore M. Hersh, Against All Enemies Gulf War Syndrome: The War Between America's Ailing Veterans and Their Government (Ballantine Publishing Group, 1998), 42.

⁵ Jeffrey Hyman, "The Treatment of Dental Emergencies at a Naval Training Facility," Military Medicine, Vol.149, (March 1984):134.

⁶ LTC Thomas F. Payne, and Colonel William R. Posey, "Analysis of Dental Casualties in Prolonged Field Training Exercises," Military Medicine, Vol. 146, (April 1981):265.

⁷ Ibid.

⁸ W.Ludwick et al., "Dental Emergencies Occurring among Navy-Marine Corps Serving in Vietnam," Military Medicine Vol.139, (February 1974):121.

⁹ LCDR Wayne M. Deutsch, DC USN and LCDR John Simecek, DC USN, "Dental Emergencies among Marines Ashore in Operations Desert Shield/Storm," Military Medicine, Vol. 161, (October 1996):620.

¹⁰ Department of the Army, Military Implications of Dental Disease, GTA 8-9-1. Washington: U.S. Department of the Army, May 1994, 1.

¹¹ F.W Allen et el., "Impact on Dental Sick Call on Combat Effectiveness: The Dental Class 3 Soldier," Military Medicine (1992), Vol. 157: 200.

¹² Department of Defense (DOD) Instruction 6410.1 by Assistant Secretary of Defense, Health Affairs, 1985, Tri-Service Standardization and Uniformity, 1991.

¹³ Department of Defense Policy 97-020, Policy for Standardization of Dental Classification.

¹⁴ Acting Assistant Secretary of Defense Edward D. Martin, M.D., "Policies on Uniformity of Dental Classification System, Frequency of Periodic Dental Examinations, Active Duty Overseas Screening, and Dental Deployment Standards," Memorandum for Assistant Secretary of the Army, Navy and Air Force, Washington, D.C., 19 February 1998.

¹⁵ Ibid.

¹⁶ Robert C. Webster, Colonel DE, "The Dental Fitness of Army War College Students: Class of 1985," U.S. Army War College Study Project, 30 April 1985.

¹⁷ Acting Assistant Secretary of Defense Edward D. Martin, M.D., "Policies on Uniformity of Dental Classification System, Frequency of Periodic Dental Examinations, Active Duty Overseas Screening, and Dental Deployment Standards," Memorandum for Assistant Secretary of the Army, Navy and Air Force, Washington, D.C., 19 February 1998.

¹⁸ Robert C. Webster, Colonel DE, "The Dental Fitness of Army War College Students: Class of 1985," U.S. Army War College Study Project, 30 April 1985.

¹⁹ R.D. Amstutz, et el., "Dental Fitness Class 3 Treatment Needs A Report of Consultation," Army Health Care Studies and Clinical Investigation Report 92-006, (October 1992).

²⁰ Acting Assistant Secretary of Defense Edward D. Martin, M.D., "Policies on Uniformity of Dental Classification System, Frequency of Periodic Dental Examinations, Active Duty Overseas Screening, and Dental Deployment Standards," Memorandum for

Assistant Secretary of the Army, Navy and Air Force, Washington, D.C., 19 February 1998.

²¹ LTC Michael C. Chisick, DC USA, "Satisfaction with Military Dental Care by Active Duty Soldiers," Military Medicine, Vol.159, (July 1994):501.

²² "How the Army Runs, A Senior Leader Reference Handbook," 1997-1998; U.S. Army War College, Carlisle Barracks, PA 17013-5050.

²³ Department of Defense (Health Affairs), 1994 Tri-Service Comprehensive Oral Health Survey Active Duty Report, June 1995, NDRI Report No. PR-9503.

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